

3.4 Using Exponents to Solve Problems

October 30, 2015 12:44 PM

* Notes

- Formula:

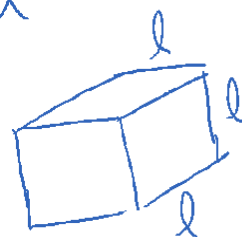
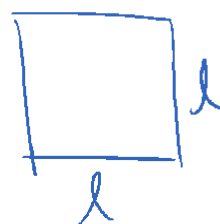
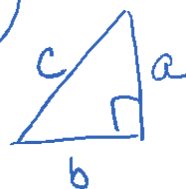
$$\text{Area of circle} = \pi r^2$$

$$\text{Pythagorus: } a^2 + b^2 = c^2$$

$$\text{Area of square} = l^2$$

$$\text{Surface area cube} = 6 \times l^2$$

$$\text{Volume of cube} = l^3$$

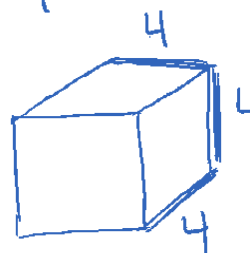


- Use a model/drawing to show:

$$5^2$$

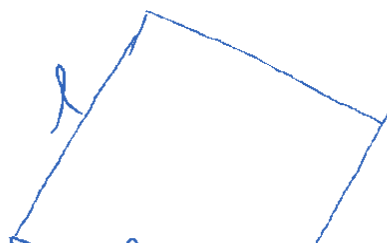
and

$$4^3$$



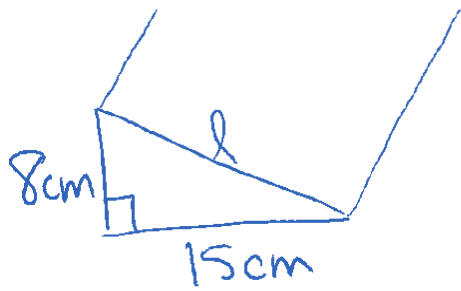
* Examples

a) Find the area of the square:



$$A_{\text{square}} = l^2$$

$$A_{\text{square}} = l^2 = (8\text{cm})^2 + (15\text{cm})^2$$



$$A_{\text{square}} = l^2 = (8\text{cm})^2 + (15\text{cm})^2$$

$$= 64\text{cm}^2 + 225\text{cm}^2$$

$$A_{\text{square}} = 289\text{cm}^2 \checkmark$$

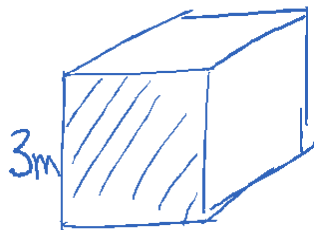
(Could do:

$$\sqrt{l^2} = \sqrt{289\text{cm}^2}$$

$$l = 17\text{cm}$$

$$\rightarrow A = l^2 = (17\text{cm})^2 = 289\text{cm}^2$$

b) Find the surface area of the cube:



$$\text{surface area}_{\text{cube}} = 6 \text{ sides} \times A_{\text{side}}$$

$$= 6 \text{ sides} \times (3\text{m} \times 3\text{m})$$

$$= 6 \text{ sides} \times 9\text{m}^2$$

$$= 54\text{m}^2$$

c) A bacteria triples every hour. There are 50 bacteria to start with. How many will there be after:

i) 3 hrs?

$$50 \times 3 \times 3 \times 3 = 50 \times 3^3 = 1350$$

ii) 5 hrs?

$$50 \times 3^5 = 12,150 \text{ bacteria}$$

\nwarrow # of hrs
 \nearrow triples

★ Practice

Pg 112 # 13, 15, 16
Pg 118 # 3-10

